DOCUMENT RESUME

ED 265 199 TM 860 054

AUTHOR Soh, Kay-Cheng
TITLE Change, Responsibility and Teaching Behaviors: Three New Scales for Their Measurement. Institute of Education Occasional Paper No. 24.
INSTITUTION Institute of Education (Singapore).
REPORT NO ISBN-9971-953-25-0
PUB DATE Jul 85
NOTE 25p.
PUB TYPE Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Analysis of Variance; *Attitude Measures; *Behavior Rating Scales; *Change; Correlation; Evaluation Methods; Foreign Countries; Item Analysis; *Measurement Techniques; Measures (Individuals); *Teacher Evaluation; *Teacher Responsibility; Test Reliability; Test Validity
IDENTIFIERS Singapore

ABSTRACT

Eighty Singapore teachers voluntarily participated in the evaluation of three new scales: (1) the Responsibility Scale, which measures the teacher's sense of responsibility, willingness to take on additional new duties, and perception of being assigned duties; (2) the Change Scale which measures the teacher's acceptance of changes in life as normal happenings, and feelings toward change as enriching life experience; and (3) the Teaching Behaviors Scale, which reports the frequency of teacher reinforcement, feedback, presentation, consolidation, evaluation, and management behaviors. The efficacy of each new scale was studied by item analysis, internal consistency check, analysis of variance, and correlation with criterion measures. The Educational Attitude Scale, Teacher Locus of Control Scale, Dogmatism Scale, and Machiavellianism Scale were the criterion measures used for evaluating the validity of the new scales. With the exception of a small number of weak items, the three scales have items which show acceptable discrimination. The scales have high reliability and correlate with educational attitude and locus of control. There is evidence of concurrent as well as discriminant validity. (PN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED265199

IE Occasional Paper No. 21

CHANGE, RESPONSIBILITY AND PLANNING RESEARCH:

Three Key Scales for Their Measurement

SOH Kay-Cheng

Institute of Education
Singapore

NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

SOH Kay-Cheng

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

TM860054

PREFACE

Education is a co-operative enterprise in which personnel in different capacities contribute in accordance with their roles. Many members of staff at the Institute of Education have been closely involved in evaluation and research studies of various kinds in IE commissioned by the Ministry of Education and the Curriculum Development Institute of Singapore. In such endeavours, a recurring problem is the lack of suitable measuring devices. We have been able to produce questionnaires and scales which are largely project-specific and hence short-lived.

The three new scales reported here, though yet to be used in evaluation and research studies, are for the measurement of three personal and professional qualities of teachers and are believed to form part of the 'software' which facilitate new 'adventures' in education.

It is our sincere hope that these new scales, imperfect as they are bound to be at this stage, will be of help to evaluators and researchers in the Ministry, the CDIS, the schools, and of course IE.

DR TAN WEE KIAT
HEAD, SCHOOL OF FOUNDATION STUDIES

July 1985

PREFACE

Education is a co-operative enterprise in which personnel in different capacities contribute in accordance with their roles. Many members of staff at the Institute of Education have been closely involved in evaluation and research studies of various kinds in IE commissioned by the Ministry of Education and the Curriculum Development Institute of Singapore. In such endeavours, a recurring problem is the lack of suitable measuring devices. We have been able to produce questionnaires and scales which are largely project-specific and hence short-lived.

The three new scales reported here, though yet to be used in evaluation and research studies, are for the measurement of three personal and professional qualities of teachers and are believed to form part of the 'software' which facilitate new 'adventures' in education.

It is our sincere hope that these new scales, imperfect as they are bound to be at this stage, will be of help to evaluators and researchers in the Ministry, the CDIS, the schools, and of course IE.

DR TAN WEE KIAT
HEAD, SCHOOL OF FOUNDATION STUDIES

July 1985

CONTENTS

	Page
Preface	
List of Tables	
INTRODUCTION	1
METHOD	3
Subjects	3
New Scales	3
Responsibility Scale	3
Change Scale	
Teaching Behaviours Scale	3
Criterion Measures	4
Educational Attitude Scale	4
Teacher Locus of Control Scale	4
Dogmatism Scale	4
Machiavellianism Scale	5
Data Analysis	5
RESULTS	6
Responsibility Scale	6
Change Scale	7
Teaching Behaviours Scale	8
CONCLUSION	10
REFERENCES	11

LIST OF TABLES

Table		Page
Table 1:	Responsibility Scale: Scale Items, t-values, and Point-biserial Correlations	13
Table 2:	Change Scale: Scale Items, t-values and Point-Biserial Correlations	14
Table 3:	Classroom Teaching Behaviours Scale: Scale Items, t-values and Point-Biserial Correlations	15
Table 4:	Classroom Teaching Behaviours Scale: Intercorrelations Among Subscales	17
Table 5:	Correlations Between Responsibility, Change, and Teaching Behaviours and Criterion Measures	18
Table 6:	Two-Way ANOVA Results	19

CHANGE, RESPONSIBILITY, AND TEACHING BEHAVIOURS: THREE NEW SCALES FOR THEIR MEASUREMENT

SOH Kay-Cheng

INTRODUCTION

The past half decade saw a series of wide-encompassing changes in the education scene in Singapore. It started with the review of the Ministry of Education (Goh, 1978) which set in motion the various long-ranging events at different levels of the education. The New System of Education with its attendant, explicit policy of streaming was first implemented at the secondary level in 1980 and the primary level the following year.

Concomitant to the implementation of the New Education System was the establishment of the Curriculum Development Institute of Singapore (CDIS) and the revamping of teacher education programmes at the Institute of Education. It is therefore readily appreciated that successful and effective implementation of the new education system depends to some extent on the classroom teachers who need to re-orientate themselves with regard to their views of education, to take on new responsibilities, and to acquire or develop a more learner-centered approach to teaching.

Against these backdrops, educational evaluation has become part and parcel of the various programmes, projects and packages introduced into the schools. Such evaluation, depending on their nature and scope, have been undertaken by personnel in various capacities: Monitoring exercises by Ministry of Education officers, formative evaluation of curriculum package by CDIS project teams, and summative

evaluation of curriculum implementation and relevant research studies by Institute of Education staff. Moreover, schools are encouraged and financially supported by the Ministry to carry out school-based research and experimentation.

Over the past few years, the present writer has been involved closely with the evaluation and research studies based at the Institute of Education. These studies almost invariably require the development of new data collection devices that are specific to the object evaluated. This has to be the case as each evaluation object is unique by itself, be it a programme or an instructional package. However, as alluded to earlier, the introduction of new practices and curriculum at the classroom level involves the teachers in developing new perceptions, performing new duties, and acquiring new teaching behaviours. These seem to be the basic elements cutting across various facets of the professional life of a teacher. If so, then the measurement of the teacher's attitude towards change, her readiness to accept additional responsibility, and the characteristics of her teaching behaviours ought to be of interest and concern to personnel responsibility for monitoring, formative evaluation, summative evaluation and research.

It is a common experience of educational and programme evaluators, here as is true elsewhere, that relevant, reliable and valid measuring devices are in short supply; not infrequently they have to re-invent the wheel, so to speak. As it is believed that the three 'elements' (change, responsibility, and teaching behaviours) will help or hinder the introduction into the classroom of new practices and materials, an attempt to develop psychometrically

dependable measuring instruments is warranted. The present study* proposes to meet this need in a small way.

METHOD

Subjects

Eighty teachers were contacted for voluntary participation in this study. They were equally distributed among four groups: male graduates, male-non-graduates, female graduates, and female non-graduates. Two-thirds of these teachers had more than three years of qualified teaching experience.

New Scales

The three new scales to be evaluated here include the following:

Responsibility Scale. This newly developed scale has its items presented in five-point Likert format. They purport to measure the teacher's sense of responsibility, willingness to take on additional, new duties, and their perception of being assigned duties. (Items of this and the other two new scales are shown in Tables 1 to 3.)

Change Scale. The 20 items of this new scale are also in five-point Likert format and measure the teacher's acceptance of changes in life as normal happenings, and feelings toward change as enriching life experience.

Teaching Behaviours Scale. This scale comprises 22 five-point items for the teacher to report the frequency with which she has

---

* M Ed students on the Cognitive and Affective Measurement course, in 1984, contributed useful ideas and assisted in data collection. Their valuable contributions are gratefully acknowledged. Thanks are also due Miss Sabariah for her painstaking typing and retyping of this paper.

demonstrated each teaching behaviour. The items fall into six broad categories: reinforcement (4 items), feedback (4 items), presentation (4 items), consolidation (4 items), evaluation (3 items), and management (3 items).

Criterion Measures

The four scales used as the criterion measures for evaluating the validity of the three new scales include the following:

Educational Attitude Scale. This consists of 20 Likert-type items. Agreements with the statements denote a more progressive, open, and learner-oriented view of education. Although the items deal with four important aspects of school life (children, discipline, methods, and administration), only the total scores were treated here. Reliabilities of .36 to .79 have been reported (Lau and Soh, 1971; Soh, 1974, 1982 and 1984). Validity of this scale is evidenced by its correlations with an adapted version of Rokeach's Dogmatism Scale (Rokeach, 1960; Soh 1974 and 1982) and the Teacher Locus of Control Scale (Taylor et al., 1981; Soh, 1984). For the present sample, a Cronbach alpha of .70 was obtained.

Teacher Locus of Control Scale. This scale was recently developed to measure teachers' generalized expetancy of own control over pupil behaviour and performance as well as classroom events (Taylor et al., 1981). Reliabilities reported vary from .58 to .81 (Sadowski et al., 1981, Sadowski and Woodward, 1983; Taylor et al., 1981). For the present sample, a Cronbach alpha of .71 was obtained.

Dogmatism Scale. Rokeach (1960) developed the original Dogmatism Scale for measuring closed-mindedness which is

characteristic of persons who are prone to resist new in-coming information which is inconsistent with their current views. The adapted version used in the present study has reliabilities of .82 and above (Soh, 1972, 1973, 1974, and 1982). A Cronbach alpha of .68 was obtained for the present sample.

Machiavellianism Scale. Christie and Geis (1970) developed this scale to measure the Machiavellian personality, which is characterized by the ancient Italian author as being unscrupulous, opportunistic, exploitive and manipulative. Reliabilities from .49 to .71 were earlier reported (Soh, 1982) and a Cronbach alpha of .85 was obtained for the present sample.

Data Analysis

The efficacy of each of the three new scales was studied by way of (a) item-analysis, (b) internal consistency check, (c) correlation with criterion measures, and (d) analysis of variance.

For each new scale the subjects were classified as highs or lows, using the median as a cut-off point. Having had the two groups thus formed, the t-ratio was obtained to compare the item means of the highs and lows for item discrimination. The corresponding point-biserial correlation coefficient r was then computed for an estimate of item contribution to the total score.

The internal consistency of the new scale was then evaluated by finding the Cronbach alpha which indicates the homogeneity of the item.

Peason's product-moment correlation coefficients were subsequently calculated between the new scale and the various criterion measures for evaluating validity. In addition to these, intercorrelations among

the three new scales were also calculated. Moreover, intercorrelations among the six subscales were calculated to study the internal structure of the Teaching Behaviours Scale.

Finally, for each new scale, a two-way ANOVA was run to assess the main effects of sex and qualification as well as their interaction effect.

RESULTS

Results of the analyses are presented in Tables 1 to 6. These will be referred to when the efficacy of each new scale is discussed.

Responsibility Scale. As shown in Table 1, thirteen of the 14 items in this scale discriminated between the highs and lows and, for these, the point-biserial r's vary from .23 to .65 with a median of .41 . This scale has a Cronbach alpha of .79 which is rather respectable for a new scale; thus, the scale can be deemed as having a high degree of internal consistency.

As shown in Table 5, this new scale correlated with educational attitude and locus of control in the expected direction, though that with Machiavellianism was a surprise. It makes sense that subjects who were more prepared to accept responsibilities were also more progressive, open and learner-oriented in their view of education; had a stronger feeling of personal effectiveness; and, were less manipulative in interpersonal relationship. It also makes sense that the more 'responsible' subjects also held more positive view of change and had classroom teaching behaviours which encouraged pupil responsibility and provided regular feedback. There is however no significant correlation with Dogmatism although one might expect a negative correlation here.

There is, however, as shown in Table 6 a slight sex bias in favour of males who score significantly higher than females, though the scale is free from qualification bias and showed no sex-qualification interaction.

The only weak item (12: My main interest is to get over with the job) was negatively worded to represent a sense of impatience with a task. The item mean (3.28) suggests that all subjects had this feeling some of the time, which seems quite normal in view of the many responsibilities of teachers.

Change Scale. As Table 2 shows, of the 20 items in the scale, 15 discriminated the highs and lows significantly. The point-biserial r's for these discriminating items vary from .29 to .68 with a median of .48 . A Cronbach alpha of .89 was obtained indicating that the scale is highly reliable.

From Table 5, it can be seen that this new scale correlated significantly with educational attitude and locus of control. Such correlations are interpretable in that subjects who were more receptive to change tended to hold more open attitudes towards education and have a stronger sense of self-efficacy. There are no correlations with Dogmatism and Machiavellianism.

As shown in Table 6, there is a significant sex effect in favour of males but neither qualification nor interaction effect.

Although one normally does not expect every item of a new attitude scale to work, it is interesting to see how the subjects responded to the five weak items. The means for all subjects are show below:

# 2	People are lost because of change.	2.85
# 6	"There is nothing new under the sun."	3.94
#13	A stable environment is a more comfortable one to be in.	2.16
#14	People question the usefulness of change.	2.26
#18	Many of the changes we have seen are just not necessary.	2.83

As shown above, the subjects as a whole generally agreed with the old saying (#6), disagreed that changes are undesirable (#13 and #14), and were hesitant with regard to the effect of change (#2) and the need to change (#18). In a way this might have reflected the general acceptance of change the subjects have seen over the years in a fast-developing nation.

Teaching Behaviours Scale. Table 3 shows only one of the 22 items of this new scale not discriminating between the highs and lows. The point-biserial r's for the 21 effective items vary from .20 to .47, with a median of .33 . The Cronbach alpha is .80, indicating high reliability of the scale as a whole.

Table 4 shows the intercorrelations between the six subscales when the item were grouped a prior in accordance with item content. Centroid analysis of the intercorrelation matrix yielded a factor loaded by Reinforcement (.447), Feedback (.532), Presentation (.437), Consolidation (.574), and Evaluation (.641). This general factor which accounts for 24.3% common variance seems to indicate attempts at influencing pupils' cognitive learning. A second, bi-polar factor explains 11.4% common variance and is loaded by Management (.376), Consolidation (-.473) and Evaluation (-.419). This suggest attempts at influencing pupils' behaviour and freedom in the classroom. It is

obvious these two factors together account for only slightly more than one-third common variance, leaving two-thirds unexplained.

Again, this new scale as a whole correlated significantly with educational attitude and locus of control but neither with Machiavellianism nor with Dogmatism. It seems reasonable that subjects who behaved (at least, they believed they did) in a manner that would encourage pupil participation were more learner-oriented in educational attitude. It also makes sense that such teachers tended to have a higher sense of personal effectiveness which would have afforded the readiness to involve pupils more actively in the classroom.

Two-way ANOVA shows no sex, qualification and interaction effects (Table 6) in this scale.

The only weak item (#20: Allow pupils to choose whom they like to sit with) has an item mean of 2.8 ("About half of the time") which suggests the subject did not do this consistently.

DISCUSSION AND CONCLUSION

With the exception of a small number of weak items, the three new scales have items which show acceptable discrimination. All three scales have high reliability and correlate in the expected manner with educational attitude and locus of control. The correlations are not so high as to suggest the effect of response set (acquiescence). Thus, there is evidence of concurrent validity.

The lack of correlations between the new scales and Machiavellianism as well as Dogmatism largely concur with previous

studies which found teacher attitudes and behaviour to be relatively free from the influence of manipulativeness and closed-mindedness. This evidences the discriminant validity of the new scales.

The unexpected negative correlation between Responsibility and Machiavellianism may not be entirely unreasonable. Willingness to accept responsibility implies readiness to 'be held responsible' which in its turn implies personal risk in new undertakings. This psychological state is less likely to be found in the Machiavellian who tends to be exploitive for his own benefit.

As a first attempt the three new scales present themselves quite well, reasonably acceptable if not impressive in terms of item quality, reliability, and concurrent and discriminant validities. This by no means implies that further refinement is not necessary. On the contrary, it is highly desirable to obtain further evidence of their <u>predictive</u> validities by correlating responses to these scales and some external, behavioral indicators in real school situations.

References

1. Christie, R. and Geis, F. (1970) Studies in Machiavellianism. Academic Press.

2. Goh, Keng Swee (1979) Report on the Ministry of Education, 1978. Singapore: Ministry of Education.

3. Rokeach, M. (1960) The Open and Closed Mind. New York: Basic Books.

4. Sadowski, C.J., Taylor, R.C., Woodward, H.R., Peacher, R.K., and Martin, B.J. (1981) Reliability and validity of a Likert-type locus of control scale for teacher. JSAS Catalog of Selected Dogmatism in Psychology, 12 (32, Ms 2475).

5. _____, E. Woodward, H.R. (1981) Teacher Locus of Control and Students' Perception and Performance. Paper presented at the annual meeting of the American Psychological Association, Los Angeles, 1981.

6. Soh, K.C. (1972) Dogmatism, training and enjoyment of Western classical music. Psychologia, 15, 58-64.

7. _____ (1973) Dogmatism, sex-role identification and science. Psychologia, 16, 34-37.

8. _____ (1974) Dogmatism and educational attitudes. Psychologia, 17, 20-24.

9. _____ (1982) Educational attitude, dogmatism, and Machiavellianism of student teachers. Singapore Journal of Education, 4, 8-16.

10. _____ (1984) Teacher locus of control and its correlates among experienced teachers. Paper presented at the annual conference of the Australian Association for Educational Research, Perth, November 1984.

11. Taylor, R.C., Sadowski, C.J. and Peacher, R.K. (1981) Development of a Likert-type Locus of Control Scale for Teachers. Paper presented at the annual meeting of the Southeastern Psychological Association, Atlanta, Georgia, March 1981.

Table 1: Responsibility Scale:
Scale Items, t-values, and Point-biserial Correlations (N=80)

	Scale Item	t-value	Point biserial r's
1	I will accept a responsibility as a privilege	4.00	.41
2@	I will not accept additional responsibility if it is beyond my normal duties.	3.94	.41
3	I accept responsibility because it gives me a chance to contribute.	3.96	.41
4@	I do not volunteer to do more than my share of work.	3.88	.40
5@	I feel bullied when asked to be responsible for something.	3.01	.32
6	I am willing to take on more responsibility than others.	7.47	.65
7@	I will do my job, but I do not like additional responsibility.	4.65	.47
8	I feel useful when I am assigned more responsibilities.	6.85	.61
9@	I cannot handle more responsibilities as this will deprive me of other activities.	3.22	.34
10	As long as I can cope, I will accept additional responsibility.	5.72	.54
11	Being made responsible gives me a sense of worth.	6.00	.56
12@	My main interest is to get over with the job.	0.47*	.05*
13	When given a task, I strive to do my best.	2.11	.23
14@	I avoid offering to take, or accept additional responsibility.	5.97	.56

* With these exceptions, all other values are significant ($p < .05$, one-tailed).

@ Items negatively worded, requiring reversed scoring. The scale has five points: 5 (True all the time), 4 (True most of the time), 3 (True some of the time), 2 (Not true most of the time), and 1 (Not true all the time).

Table 2: Change Scale:
Scale Items, t-values and Point-Biserial Correlations

	Scale Item	t-value	Point biserial r's
1	Change keeps us up to date.	4.76	.47
2@	People are lost because of change.	0.63*	.07*
3	Change gives us a chance to try things out differently.	2.72	.29
4	Life improves through constant change.	8.11	.68
5@	Change drains away our time and energy.	4.56	.48
6@	"There is nothing new under the sun."	1.45*	.16*
7@	Confusion arises from change.	2.82	.30
8	An unchanging environment is a stale environment.	2.69	.29
9@	Progress does <u>not</u> depend on change.	3.65	.38
10@	Many of the changes are mere fads and fashions.	3.77	.39
11	Through change we grow.	5.58	.53
12	Life is made more interesting by changes.	4.33	.44
13@	A stable environment is a more comfortable one to be in.	0.39*	.04*
14@	People question the usefulness of change.	-0.13*	.02*
15	Without change, people get into a rut soon.	5.66	.54
16@	Changes make work more frustrating.	4.85	.48
17	To change is to progress.	6.45	.59
18@	Many of the changes we have seen are just <u>not</u> necessary.	1.42*	.16*
19	Change is the essence of life.	5.34	.52
20	Change is the rule rather than the exception in life.	3.10	.33

* With these <u>exceptions</u>, all other values are significant ($p < .05$, one-tailed).

@ Items negatively worded, requiring reversed scoring. The scale has five points: 5 (Strongly agree), 4 (Agree), 3 (Undecided), 2 (Disagree), and 1 (Strongly disagree).

Table 3: Classroom Teaching Behaviours Scale:
Scale Items, t-values and Point-Biserial Correlations

Scale Items	t-value	Point biserial r's
1. Praise pupils for giving fully correct answers.	4.12	.42
2. Praise pupils for giving partially correct answers.	4.68	.47
3. Praise pupils for answering questions, even if the answers are totally incorrect.	4.30	.44
4. Encourage pupils to answer questions even if they have some difficulties in doing so.	2.93	.32
5. Tell the class as a whole how they have performed in a test or assignment.	4.22	.43
6. Explain to the class the correct answers of the questions.	2.94	.32
7. Tell the class clearly what the lesson is about at the beginning of the lesson.	3.03	.33
8. Tell the class which pupils have made progress even though the results may not be good.	3.90	.40
9. Use a mixture of 'telling' and questioning when explaining.	3.84	.40
10. List the main points of the lesson as you teach.	3.15	.34
11. Use teaching aids to help in explaining.	1.88	.21
12. Having explained something, ask questions about it immediately.	1.77	.20
13. Towards the end of a lesson, ask a few questions to help pupils recapitulate.	4.26	.44

Scale Item	t-value	Point biserial r's
14. Ask questions to help pupils put into use what they have just learned in the lesson.	3.01	.32
15. Set exercise or homework which cater to a range of abilities.	2.74	.30
16. Allow flexibility in the amount and scope of exercise or homework.	3.20	.34
17. Show pupils where they have gone wrong in their work.	2.52	.28
18. Help pupils discover where they have gone wrong.	3.25	.35
19. Give credit to pupils' work even if they are not exactly what is expected.	2.92	.31
20. Allow pupils to choose whom they like to sit with.	1.10*	.12*
21. Allow pupils to choose whom they like to work together with.	2.00	.22
22. Allow pupils to move about when the class is at work.	1.80	.20

* With these exceptions, all other values are significant ($p < .05$, one-tailed)

@ The scale has five points: 5 (Very often), 4 (Often enough), 3 (About half of the time), 2 (Occasionally), and 1 (Very seldom).

Table 4: Classroom Teaching Behaviours Scale:
Intercorrelations Among Subscales

Subscale	Item Nos	Intercorrelations					
		R	F	P	C	E	M
R Reinforcement	1-4	1.00					
F Feedback	5-8	.36*	1.00				
P Presentation	9-12	.08	.22*	1.00			
C Consolidation	13-16	.07	.22*	.03	1.00		
E Evaluation	17-19	.17	.31*	.17	.57*	1.00	
M Management	20-22	.23*	.04	.17	-.01	.03	1.00

* $p < .05$

Table 5: Correlations Between Responsibility, Change, and Teaching Behaviours and Criterion Measures

Measure	Responsibility	Change	Teaching Behaviours
Educational Attitude	.35*	.29*	.34*
Teacher Locus of Control	.31*	.32*	.23*
Dogmatism	.04	.00	-.10
Machiavellianism	-.21*	-.04	-.04
Responsibility	1.00	.28*	.29*
Change		1.00	.35*
Teaching Behaviour			1.00

* $p < .05$ (one-tailed)

Table 6: Two-Way ANOVA Results

Scale	F-value			Remarks
	Sex (S)	Qualification (Q)	Interaction SXQ	
Responsibility	6.64*	1.35	.64	Males : mean=52.48 Females: mean=49.05
Change	4.19*	.85	2.43	Males : mean=69.70 Females: mean=64.78
Teaching Behaviour	2.80	.33	.51	Males : mean=80.68 Females: mean=77.10

* $p < .05$